

Name: *Solutions*

Without a calculator, evaluate each logarithmic expression:

1. $\log_{10} 100 = 2$	2. $\log_4 64 = 3$	3. $\log_3 81 = 4$
4. $\log_9 1 = 0$	5. $\log_{100} 10 = \frac{1}{2}$	6. $\log_5 0.2 = -1$
7. $\log_{\frac{1}{2}} 8 = -3$	8. $\log_2 0.25 = -2$	9. $\log_9 27 = \frac{3}{2}$
10. $\log_{27} 9 = \frac{2}{3}$	11. $\log_{13} \sqrt{13} = \frac{1}{2}$	12. $\log_7 (-49) = \text{undefined}$
13. $\log 1000 = 3$	14. $\log_3 \frac{1}{9} = -2$	15. $\log_8 32 = \frac{5}{3}$
16. $\log_{32} 16 = \frac{4}{5}$	17. $\log_{12} 12 = 1$	18. $\log_{0.1} 0.01 = 2$
19. $\log 0.001 = -3$	20. $\log_2 0 = \text{undefined}$	21. $\log_{0.1} 100 = -2$